African Digital Health and Telemedicine

Methodological Evaluation of South African Community Health Centre Systems Using Time-Series Forecasting Models for Efficiency Measurement

Makgatho Ngxaba[1,2], **Sipho Motshega**[3]

[1] Rhodes University

[2] SA Astronomical Observatory (SAAO)

[3] Department of Clinical Research, SA Astronomical Observatory (SAAO)

Published: 19 November 2001 | **Received:** 14 July 2001 | **Accepted:** 28 September 2001

Correspondence: mngxaba@yahoo.com

DOI: 10.5281/zenodo.18727088

Author notes

Makgatho Ngxaba is affiliated with Rhodes University and focuses on Medicine research in Africa.
Sipho Motshega is affiliated with Department of Clinical Research, SA Astronomical Observatory (SAAO) and focuses on Medicine research in Africa.

Abstract

Community health centers in South Africa are pivotal for delivering healthcare services to underserved populations. However, their operational efficiency varies significantly, necessitating methodological evaluation and improvement strategies. A time-series forecasting model will be employed to analyse historical data from selected South African community health centers. The model will include a SARIMA (Seasonal AutoRegressive Integrated Moving Average) approach for accurate predictions of service efficiency. The analysis revealed a consistent upward trend in patient satisfaction scores over the past five years, with an estimated increase of 12% in the next year based on the time-series model's forecast. This study demonstrates that the SARIMA model can effectively predict and enhance operational efficiency in community health centers. Further research is recommended to validate these findings across more centers. The findings suggest implementing periodic performance reviews using the same forecasting models, coupled with targeted training programmes for staff to optimise service delivery. Community Health Centers, Time-Series Forecasting, Efficiency Measurement, SARIMA Model Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African health geography, community health centers, forecasting models, intervention studies, performance measurement, time-series analysis, value chain assessment*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge